Ministry of
Transportation and
Communications

Ontario

MI-95

REPORT FOR
AGGREGATE AND SOILS 1985
REFERENCE SAMPLES 1.1 AND 2.1

MATERIALS INFORMATION
ENGINEERING MATERIALS OFFICE

Ontario

Ministry of
Transportation and
Communications

Soils and Aggregates Section
Engineering Materials Office
1201 Wilson Avenue
Central Building, Room 309
Downsview, Ontario M3M 1J8

Telephone: (416) 248-3286

86 05 29

File No.: 3162-2-5-3

To: Participants of Correlation Program

Re: AGGREGATE AND SOIL REFERENCE SAMPLE #'s 1.1 and 2.1

Gentlemen:

Enclosed is your copy of the final report on the test results of aggregate and soil reference sample #'s 1.1 and 2.1.

This data includes a table of results for your laboratory, as well as a set of scatter diagrams. Your laboratory number appears at the top of the table of results.

Yours truly,

Dennis T. Newman,
Acting Laboratory
Operations Supervisor.

DTN/jlo
Attachments

NOTES ON DATA PRESENTATION

1. TABLE OF TEST RESULTS

a. Column 1 - This lists the test number as designated in the M.T.C. Laboratory Testing Manual and the individual test segments.

b. Columns 2 & 3 - List the individual data for the pair of samples. NT means not tested, and * means measurement rejected.

c. Columns 4 & 5 - List the mean test data for the pair of samples for all laboratories performing the test.

d. Columns 6 & 7 - List the "Standardized Deviate" for each test result. This is a measure of how close an actual test result is to the mean for all similar test results (for one sample). It is obtained by subtracting the actual test result (X_1) from the mean ($\overline{X}$), and dividing by the standard deviation(S). A negative sign means that the test result is smaller than the mean, and no sign means the test result is equal to or larger than the mean.

e. Columns 8 & 9 - List the "Laboratory Ratings", which, in effect, are similar to the "Standardized Deviate", but in a simpler numerical form.

The ratings are as follows:

5 - test result within $\frac{1}{2}$ standard deviation from $\overline{X}$
4 - " 1 "
3 - " $1\frac{1}{2}$ "
2 - " 2 "
1 - " $2\frac{1}{2}$ "
0 - test result has been rejected as an outlier.

As before, a negative sign indicates a result that is smaller than the mean.

.... 2

2. SCATTER DIAGRAMS

The points on these diagrams are designated by letters - each letter representing a laboratory. The points are located by plotting the value obtained for the first (odd number) sample on the horizontal axis against the value obtained for the second (even numbered) sample on the vertical axis. If the results from two or more laboratories happen to intersect at the same point, the symbols & or ? are used. An * represents a point which is off the chosen scale. The scales are chosen, wherever possible, to give the most informative display of the plotted points. If a point is off the scale, it does not necessarily mean that it is outside the limits noted above.

The horizontal and vertical dashed lines forming the cross on the plot represent the median values for the two samples.

The data below the scatter diagram consists of the mean, median, standard deviation, and standard error of the mean for both samples.

NOTE:

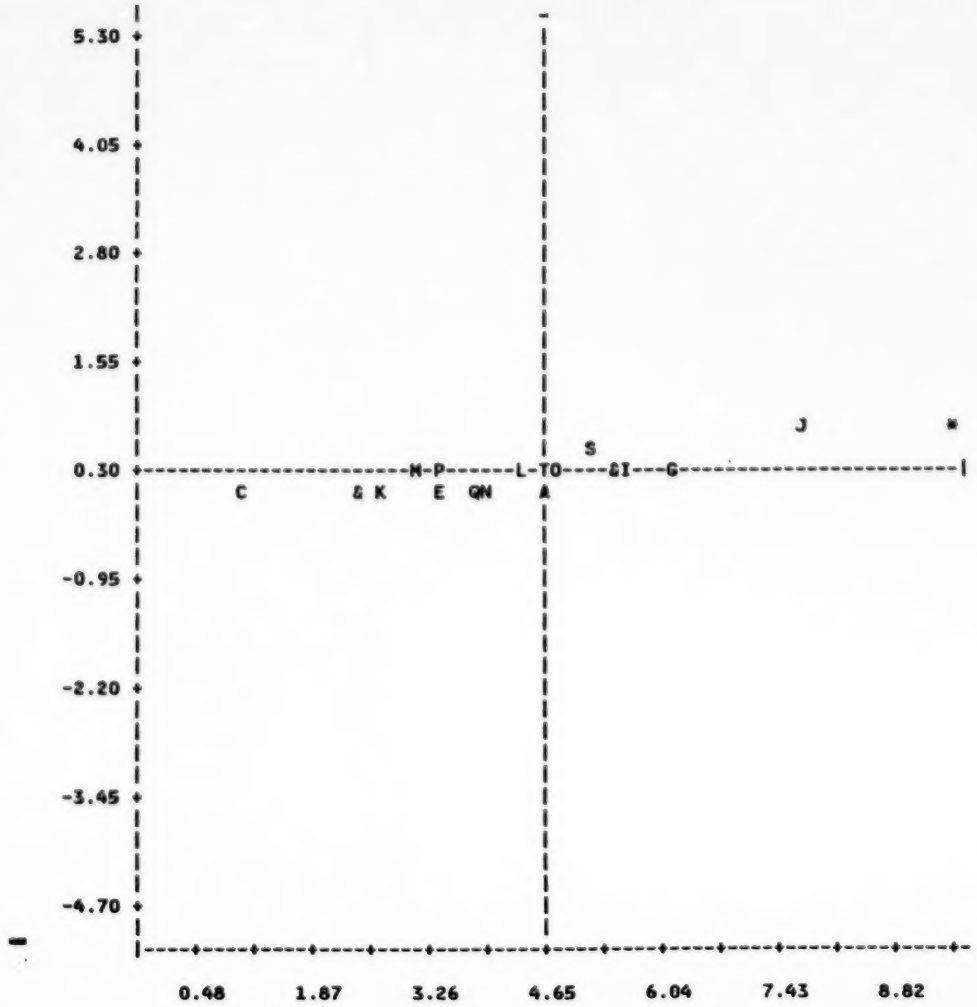
As data is obtained for additional pairs of samples, a graphical construction will be made of the laboratory ratings. This will give, at a glance, a picture of the laboratory performance, and will indicate error trends. These will be included with future reports. For further details on the correlation programs, please refer to the following reports:

EM-30; "Interlaboratory Study of the Precision of Some Aggregate Tests - Interim Report", by C.A. Rogers & Lise Manchester; May, 1979.

EM-33; "The Development of an Interlaboratory Testing Program for Construction Aggregates", by Lise Manchester; December, 1979.

EM-47; "Interlaboratory Reference Sample Programs for Aggregate, Asphalt, Concrete and Soil Tests", by B. Chojnacki, C. Rogers, and J.I. McDougall; May, 1981.

TEST 2: PERCENT RETAINED ON 19 MM SIEVE (COARSE AGGREGATE)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



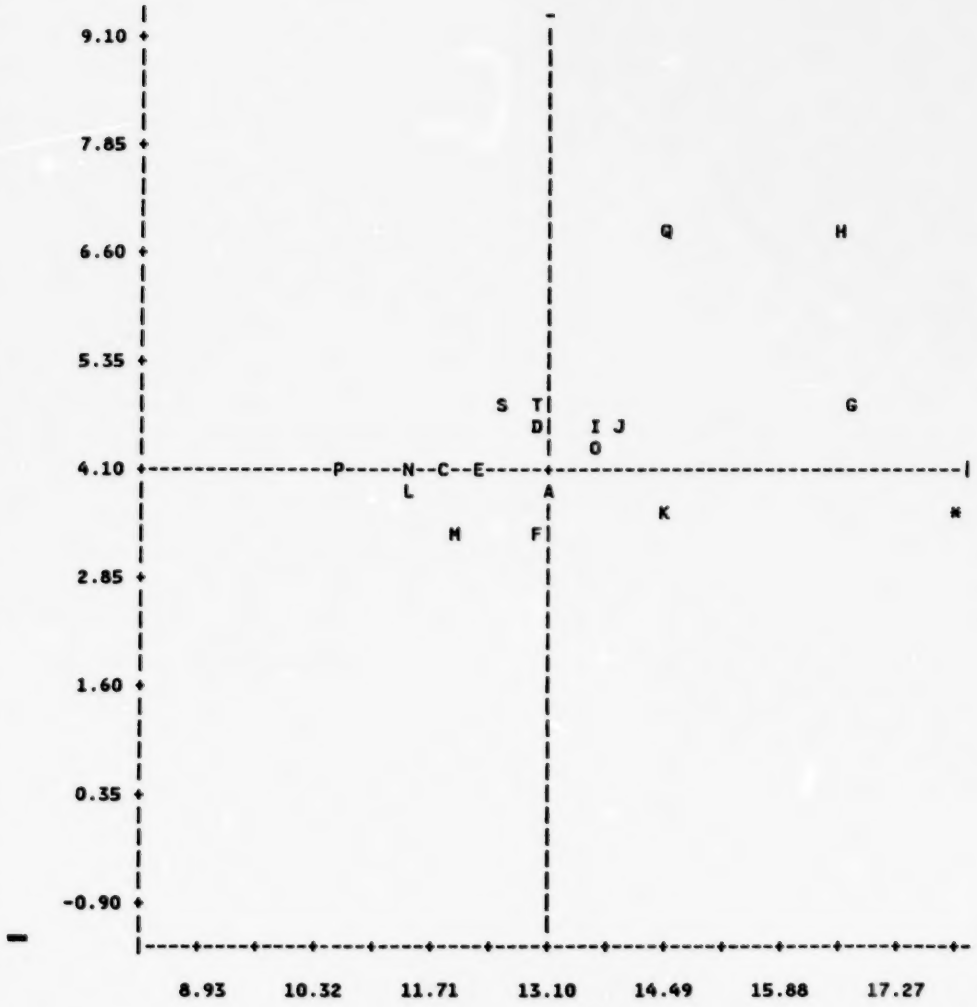
LEGEND
======

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 50 = J
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	4.710	0.285
MEDIAN	4.650	0.300
STANDARD DEVIATION	1.609	0.206
STANDARD ERROR OF THE MEAN	0.360	0.046

NO OF POINTS IN EACH QUADRANT
NE = 7
SE = 0
NW = 4
SW = 8

TEST 3: PERCENT RETAINED ON 16 MM SIEVE (COARSE AGGREGATE)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2

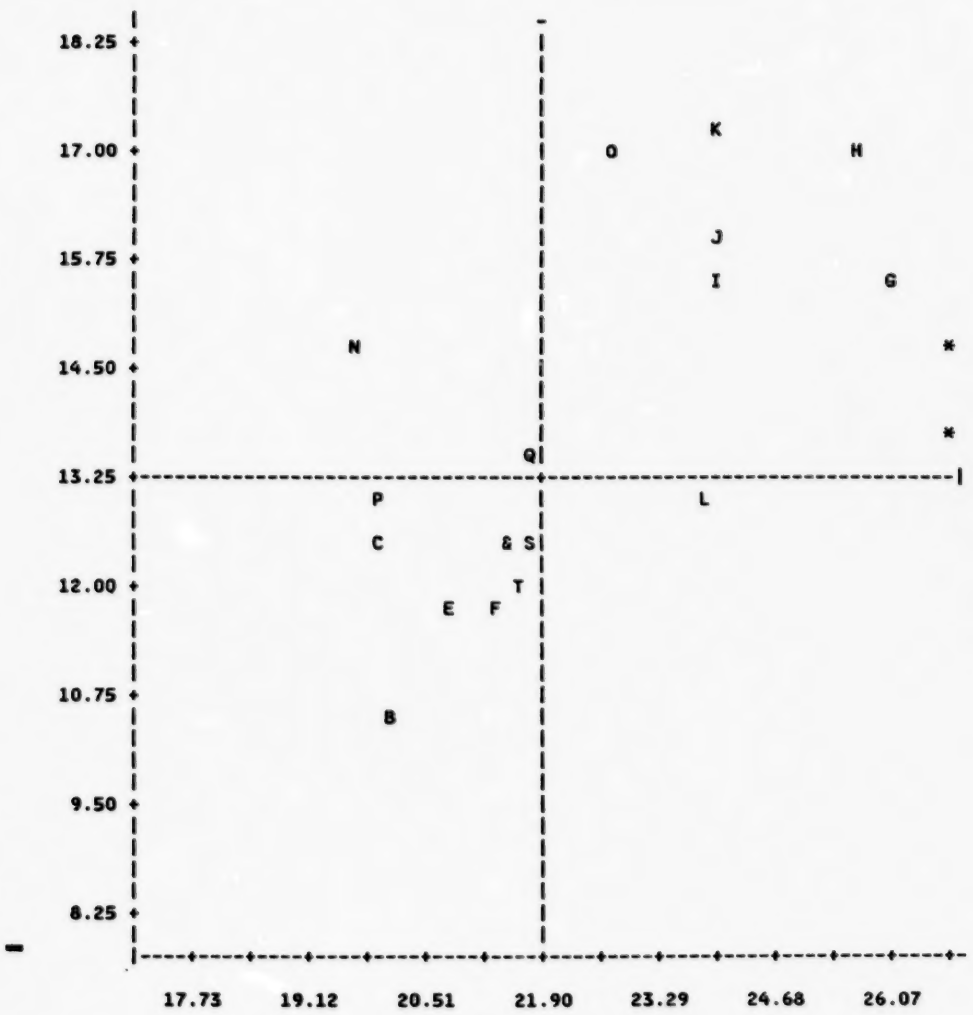


LEGEND
======
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 50 = J
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	13.350	4.290
MEDIAN	13.100	4.100
STANDARD DEVIATION	2.321	0.976
STANDARD ERROR OF THE MEAN	0.519	0.218

NO OF POINTS IN EACH QUADRANT
NE = 6
SE = 1
NW = 7
SW = 4

TEST 4: PERCENT RETAINED ON 13.2 MM SIEVE (COARSE AGGREGATE)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



LEGEND
======

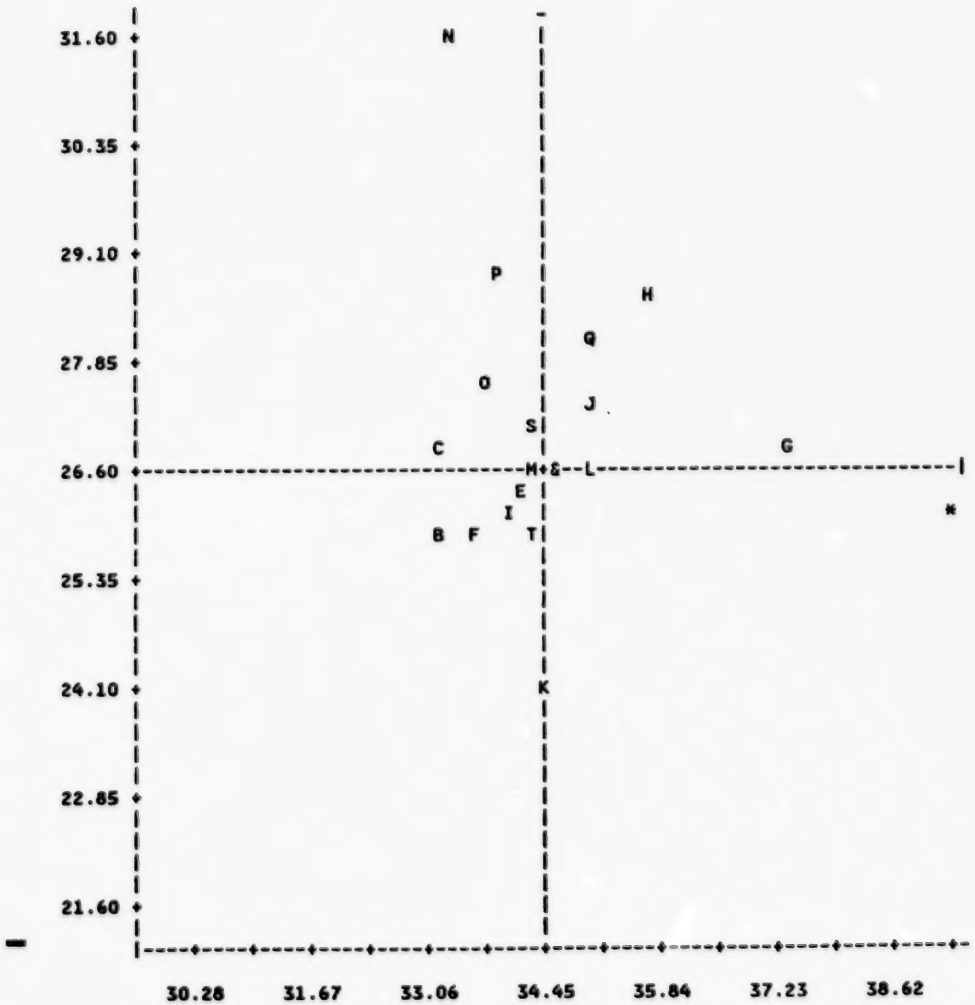
LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 13	= F
LAB. NO. 14	= G
LAB. NO. 17	= H
LAB. NO. 27	= I
LAB. NO. 50	= J
LAB. NO. 53	= K
LAB. NO. 55	= L
LAB. NO. 56	= M
LAB. NO. 58	= N
LAB. NO. 60	= O
LAB. NO. 62	= P
LAB. NO. 66	= Q
LAB. NO. 67	= R
LAB. NO. 69	= S
LAB. NO. 70	= T

	MATERIAL 1	MATERIAL 2
MEAN	22.960	13.800
MEDIAN	21.900	13.250
STANDARD DEVIATION	2.654	1.842
STANDARD ERROR OF THE MEAN	0.593	0.412

NO OF POINTS IN EACH QUADRANT

NE =	6
SE =	1
NW =	2
SW =	9

TEST 5: PERCENT RETAINED ON 9.5 MM SIEVE (COARSE AGGREGATE)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



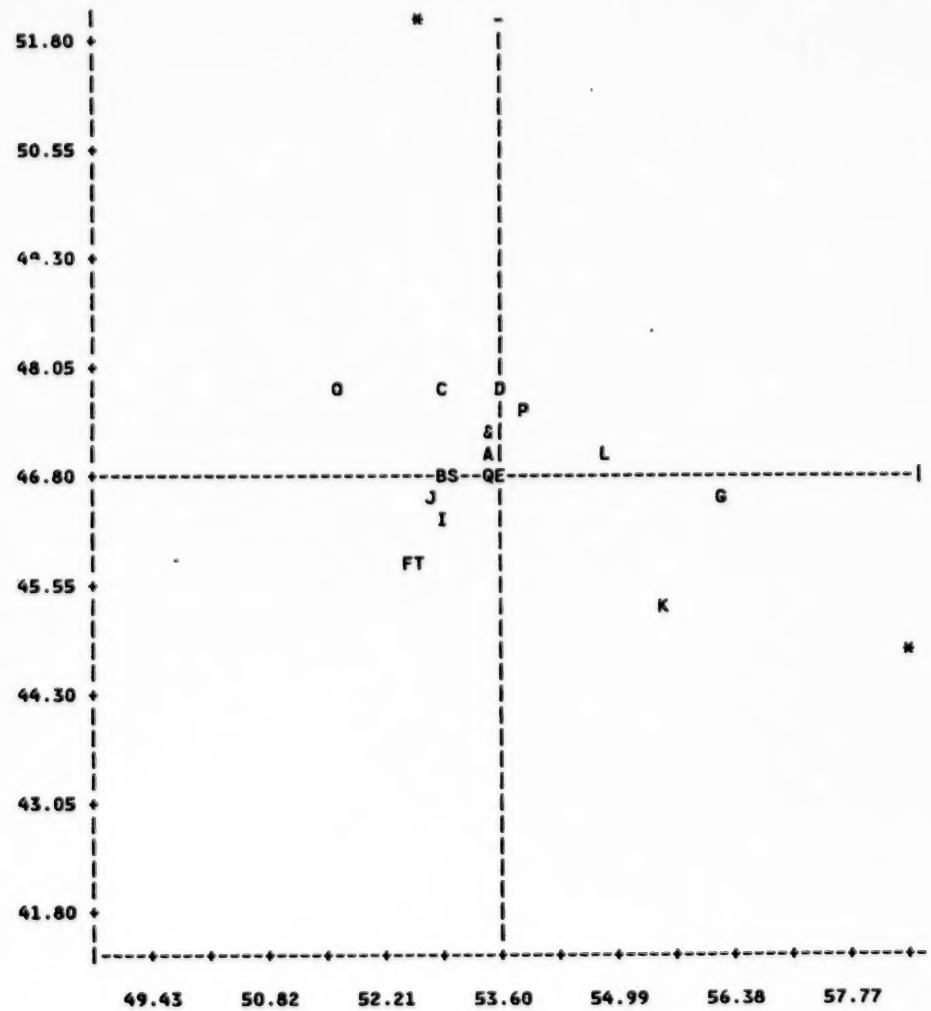
LEGEND
======

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 50 = J
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	34.855	26.950
MEDIAN	34.450	26.600
STANDARD DEVIATION	0.691	1.018
STANDARD ERROR OF THE MEAN	0.155	0.228

NO OF POINTS IN EACH QUADRANT
NE = 7
SE = 0
NW = 6
SW = 6

TEST 6: PERCENT RETAINED ON 4.75 MM SIEVE (COARSE AGGREGATE)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



LEGEND
======

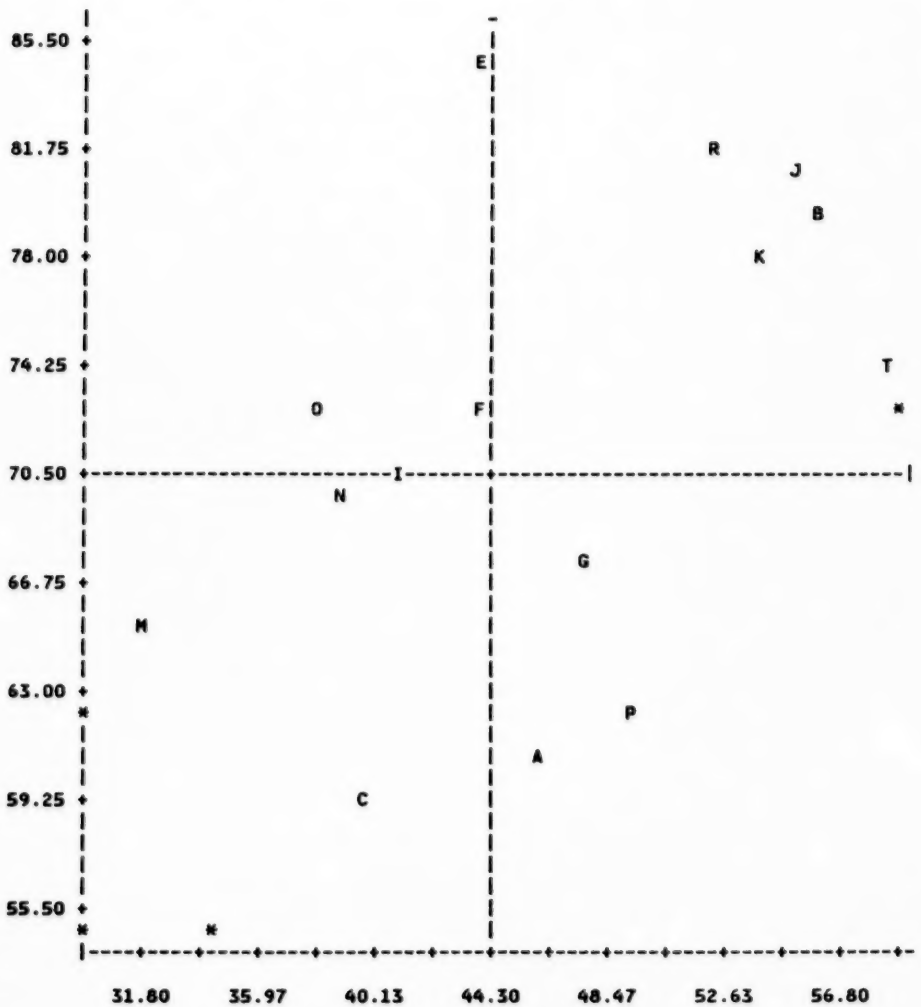
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 50 = J
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	53.850	47.095
MEDIAN	53.600	46.800
STANDARD DEVIATION	0.705	0.771
STANDARD ERROR OF THE MEAN	0.158	0.172

NO OF POINTS IN EACH QUADRANT
NE = 2
SE = 2
NW = 10
SW = 4

TEST 12: PERCENT CRUSHED PARTICLES
SCATTER PLOT ANALYSIS
SCALE: 1.667 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



LEGEND
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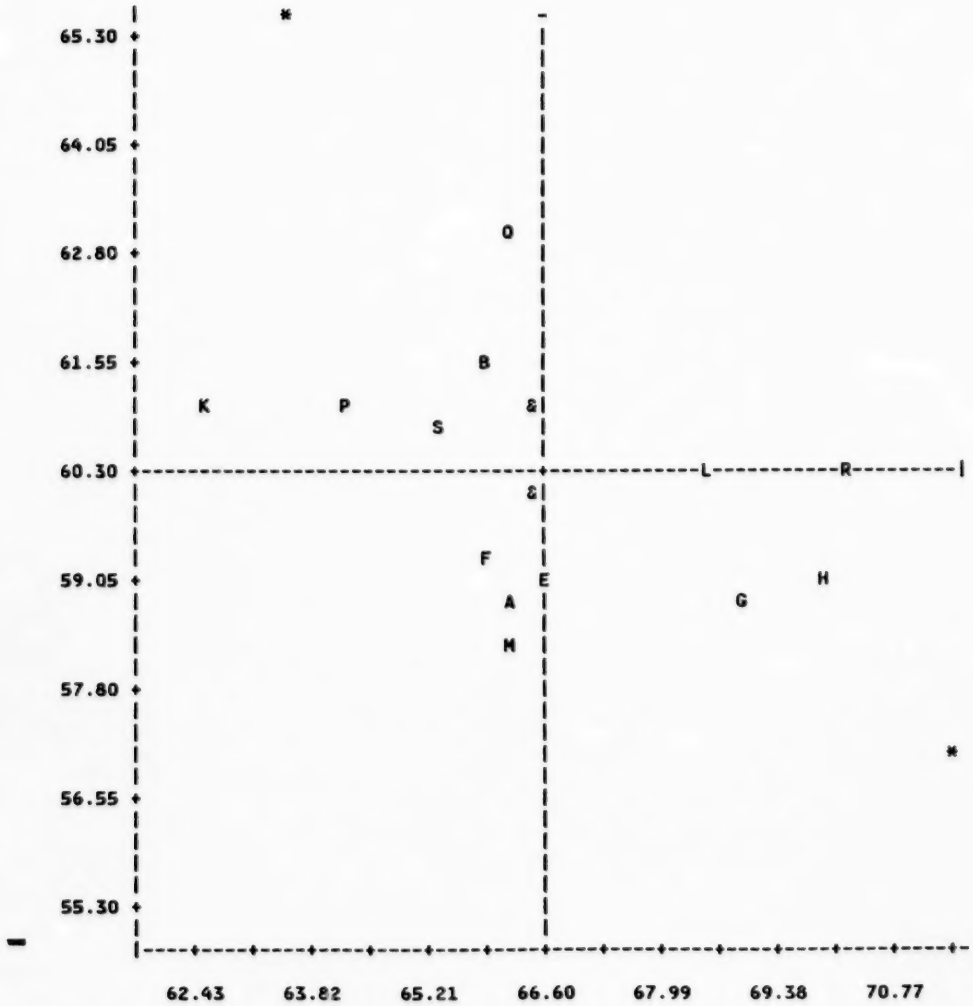
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 50 = J
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	43.805	66.510
MEDIAN	44.300	70.500
STANDARD DEVIATION	12.840	9.612
STANDARD ERROR OF THE MEAN	2.946	2.205

NO OF POINTS IN EACH QUADRANT
NE = 5
SE = 3
NW = 4
SW = 3

TEST 20: PERCENT RETAINED ON 2.36 MM SIEVE (FINE AGGREGATE)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2

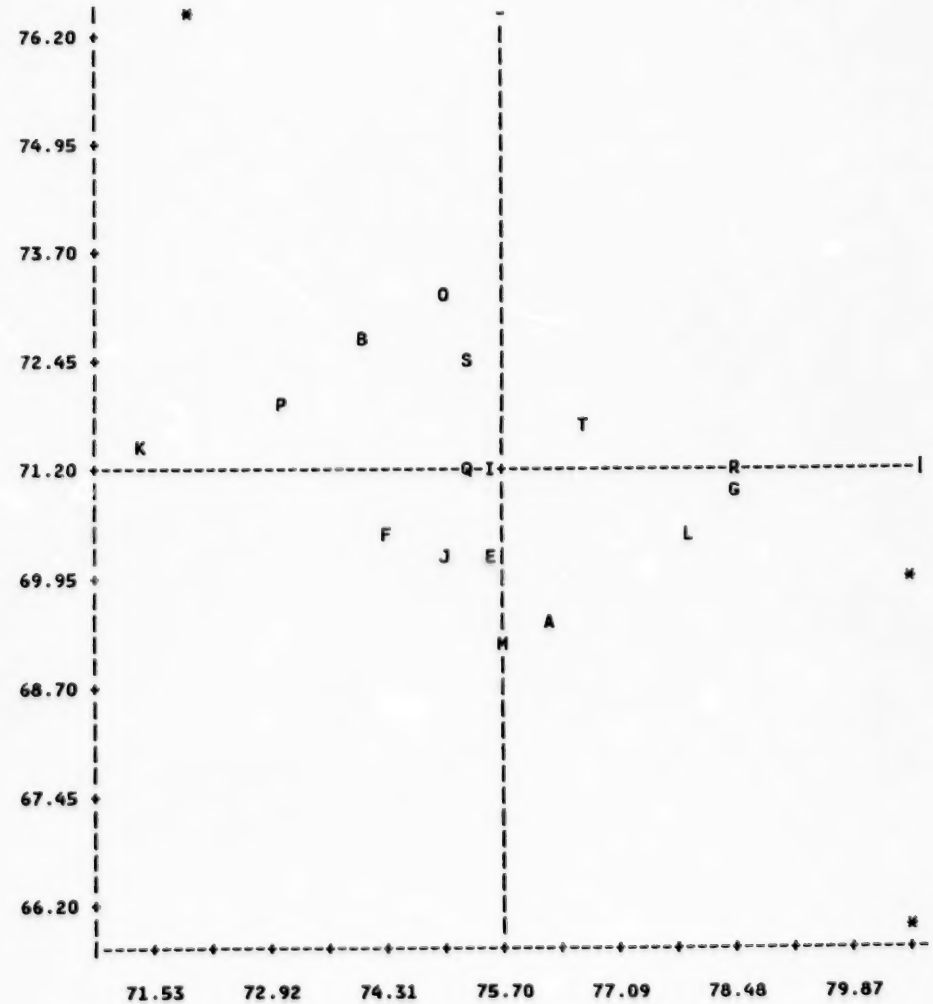


LEGEND
======
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 50 = J
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	66.910	60.400
MEDIAN	66.600	60.300
STANDARD DEVIATION	2.394	1.323
STANDARD ERROR OF THE MEAN	0.549	0.303

NO OF POINTS IN EACH QUADRANT
NE = 2
SE = 2
NW = 7
SW = 6

TEST 21: PERCENT RETAINED ON 1.18 MM SIEVE (FINE AGGREGATE)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



LEGEND
======

LAB. NO. 1	A
LAB. NO. 2	B
LAB. NO. 4	C
LAB. NO. 6	E
LAB. NO. 13	F
LAB. NO. 14	G
LAB. NO. 17	H
LAB. NO. 27	I
LAB. NO. 50	J
LAB. NO. 53	K
LAB. NO. 55	L
LAB. NO. 56	M
LAB. NO. 58	N
LAB. NO. 60	O
LAB. NO. 62	P
LAB. NO. 66	Q
LAB. NO. 67	R
LAB. NO. 69	S
LAB. NO. 70	T

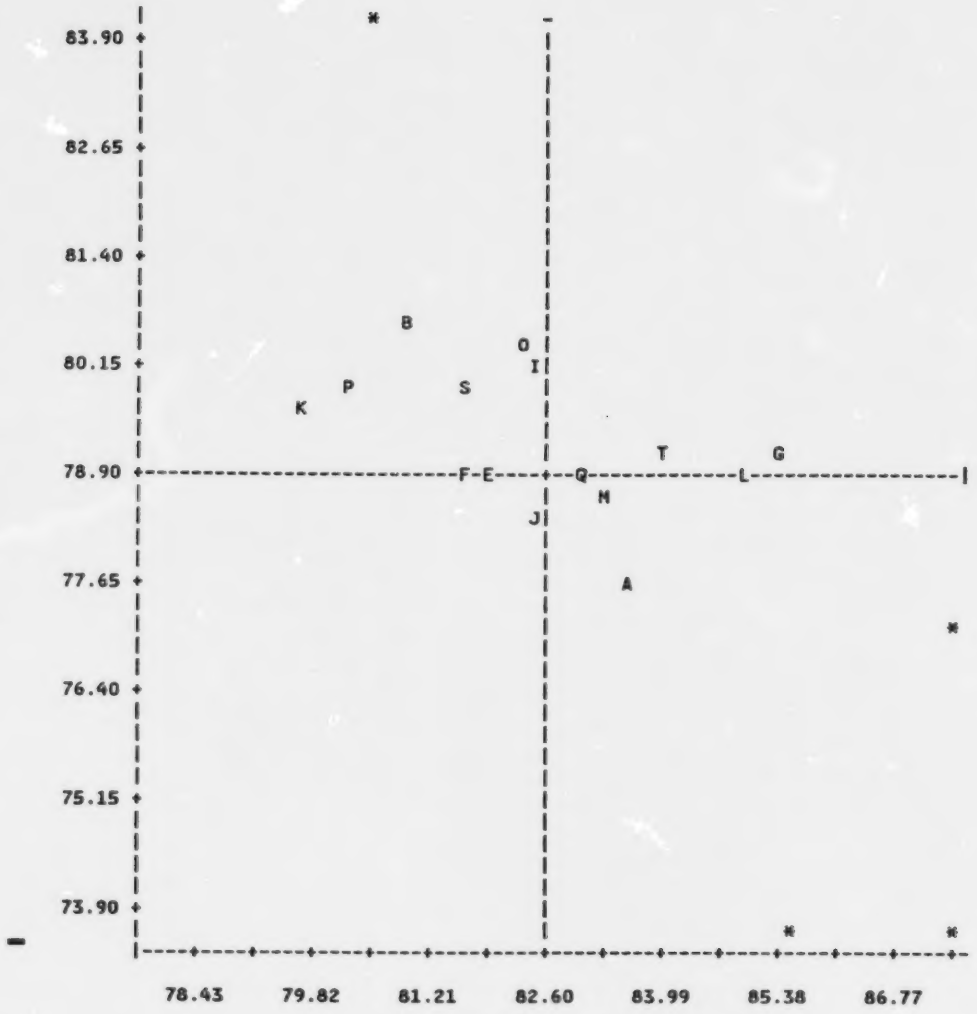
	MATERIAL 1	MATERIAL 2
MEAN	76.068	71.084
MEDIAN	75.700	71.200
STANDARD DEVIATION	2.736	2.112
STANDARD ERROR OF THE MEAN	0.628	0.485

NO OF POINTS IN EACH QUADRANT

NE	2
SE	3
NW	7
SW	4

TEST 22: PERCENT RETAINED ON 600 UM SIEVE (FINE AGGREGATE)
SCATTER PLOT ANALYSIS
SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



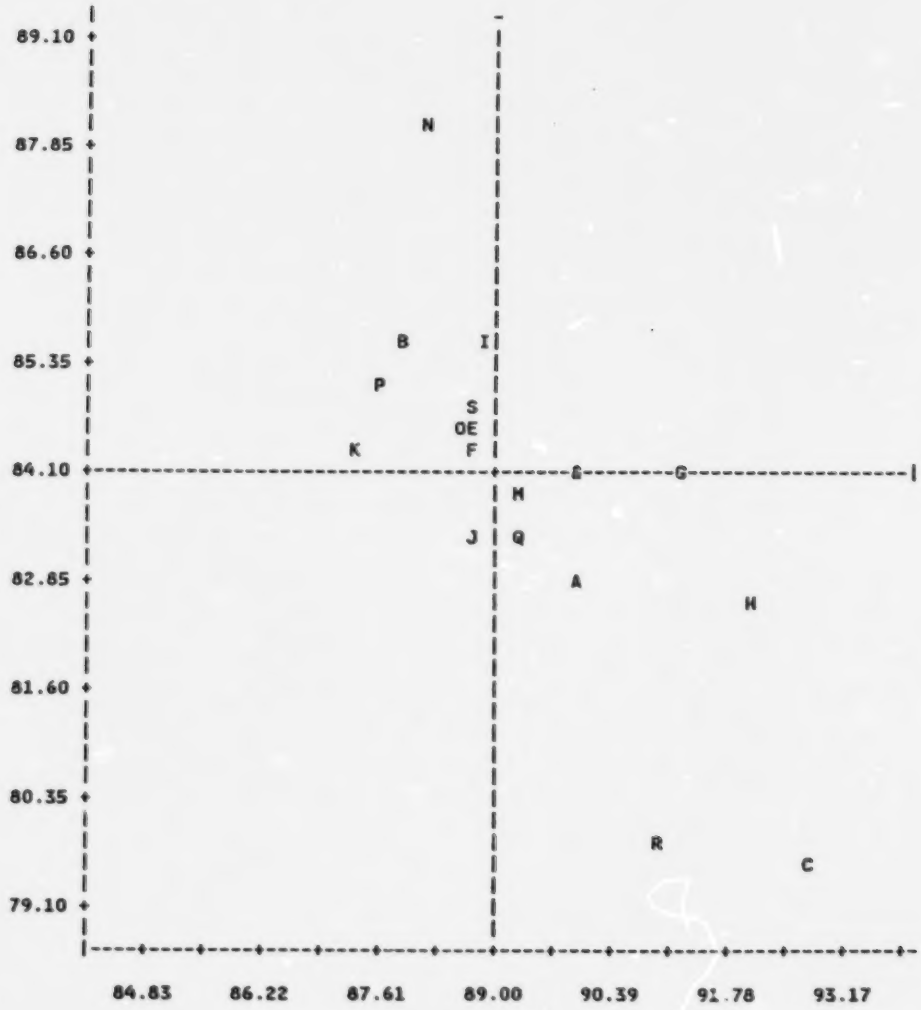
LEGEND
======

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 50 = J
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	83.221	78.600
MEDIAN	82.600	78.900
STANDARD DEVIATION	2.286	0.887
STANDARD ERROR OF THE MEAN	0.525	0.203

NO OF POINTS IN EACH QUADRANT
NE = 4
SE = 2
NW = 8
SW = 1

TEST 23: PERCENT RETAINED ON 300 UM SIEVE (FINE AGGREGATE)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



LEGEND
======

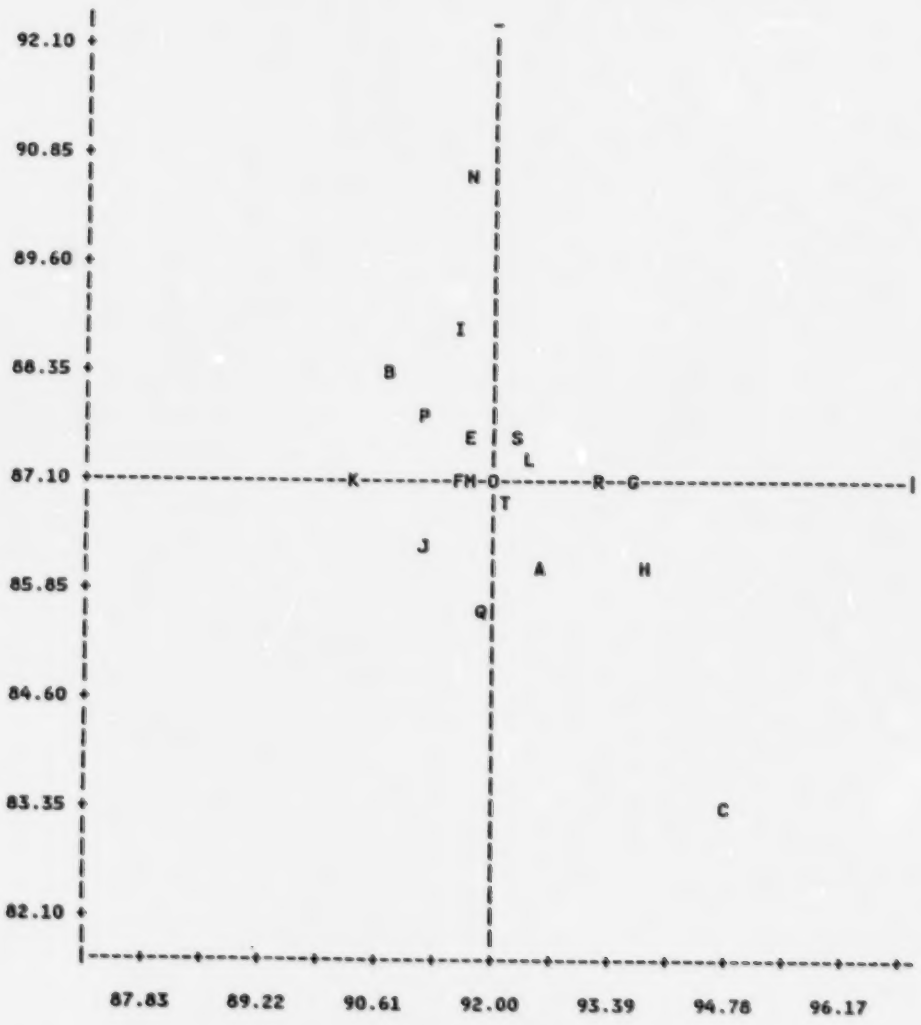
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 50 = J
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	89.568	83.926
MEDIAN	89.000	84.100
STANDARD DEVIATION	1.494	1.783
STANDARD ERROR OF THE MEAN	0.343	0.409

NO OF POINTS IN EACH QUADRANT
NE = 3
SE = 6
NW = 9
SW = 1

TEST 24: PERCENT RETAINED ON 150 UM SIEVE (FINE AGGREGATE)
SCATTER PLOT ANALYSIS
SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



LEGEND
======

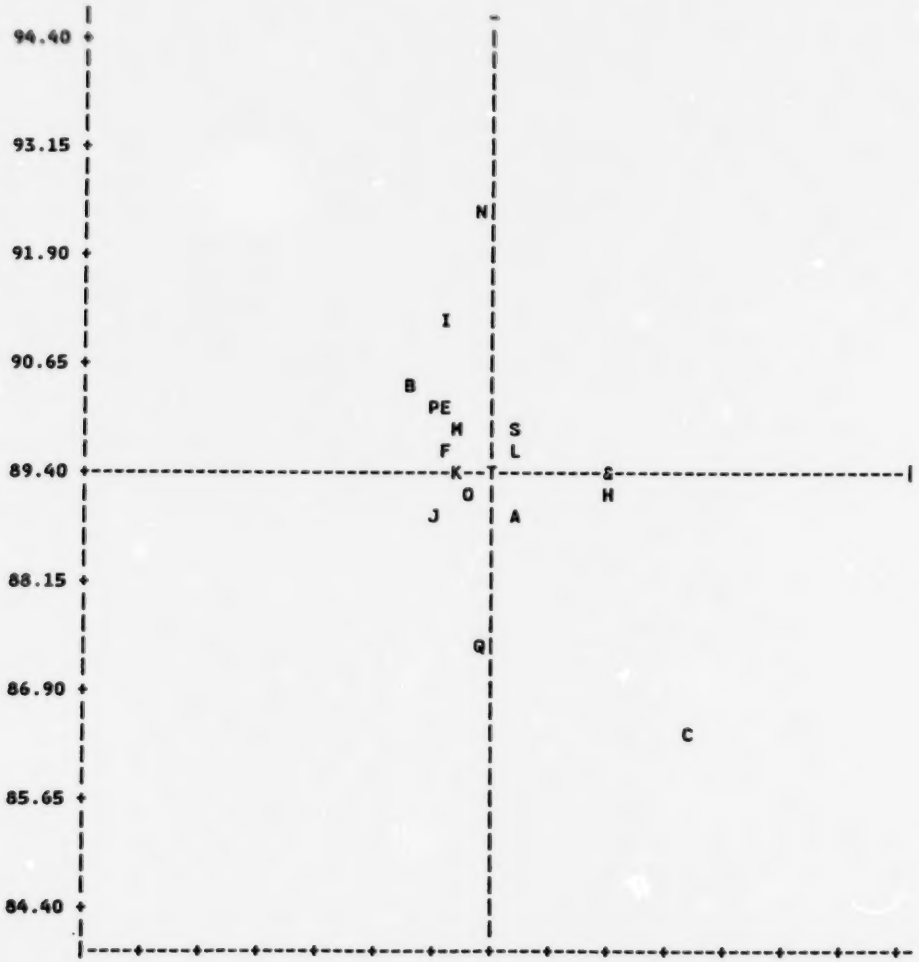
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 50 = J
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	92.279	87.095
MEDIAN	92.000	87.100
STANDARD DEVIATION	1.130	0.749
STANDARD ERROR OF THE MEAN	0.259	0.172

NO OF POINTS IN EACH QUADRANT

NE = 4
SE = 4
NW = 9
SW = 2

TEST 25: PERCENT RETAINED ON 75 UM SIEVE (FINE AGGREGATE)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



LEGEND

LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 6	= E
LAB. NO. 13	= F
LAB. NO. 14	= G
LAB. NO. 17	= H
LAB. NO. 27	= I
LAB. NO. 50	= J
LAB. NO. 53	= K
LAB. NO. 55	= L
LAB. NO. 56	= M
LAB. NO. 58	= N
LAB. NO. 60	= O
LAB. NO. 62	= P
LAB. NO. 66	= Q
LAB. NO. 67	= R
LAB. NO. 69	= S
LAB. NO. 70	= T

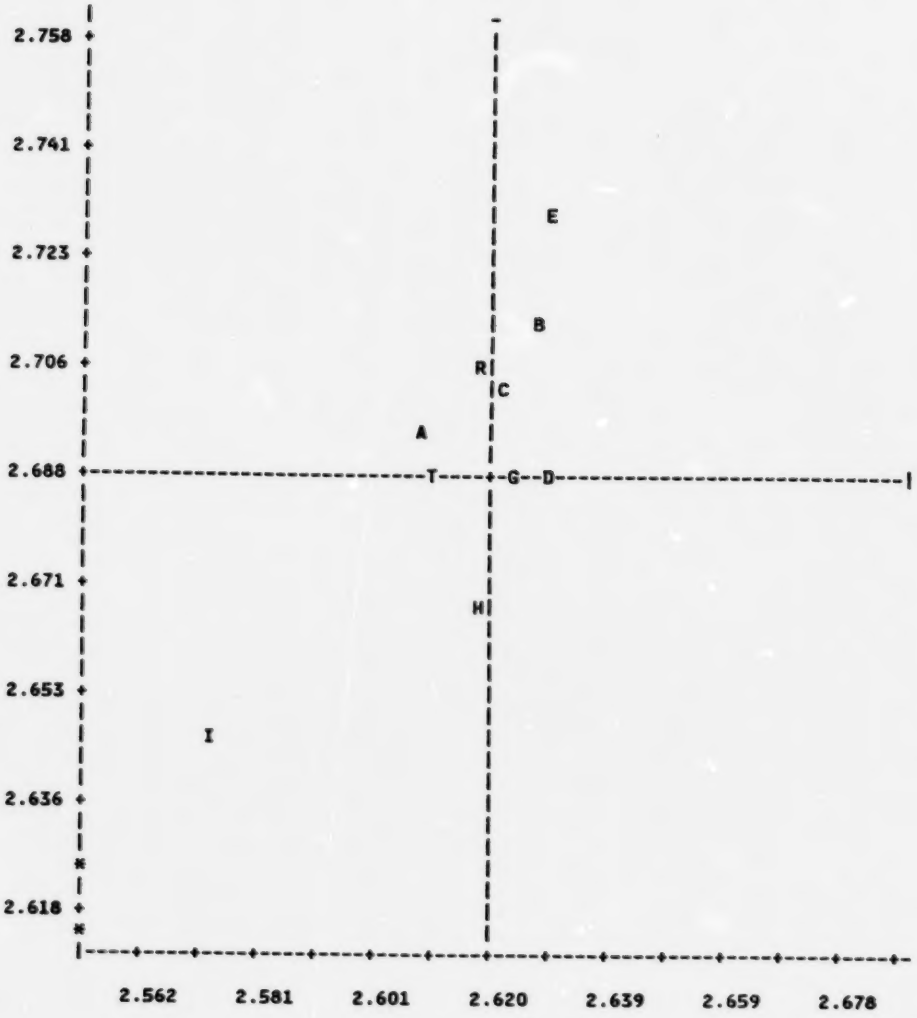
	MATERIAL 1	MATERIAL 2
MEAN	93.653	89.500
MEDIAN	93.400	89.400
STANDARD DEVIATION	0.895	0.431
STANDARD ERROR OF THE MEAN	0.205	0.099

NO OF POINTS IN EACH QUADRANT

NE =	4
SE =	3
NW =	9
SW =	3

TEST 27: RELATIVE DENSITY (FINE AGGREGATE - BULK S.S. D.)
SCATTER PLOT ANALYSIS
SCALE: 0.008 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



LEGEND
======

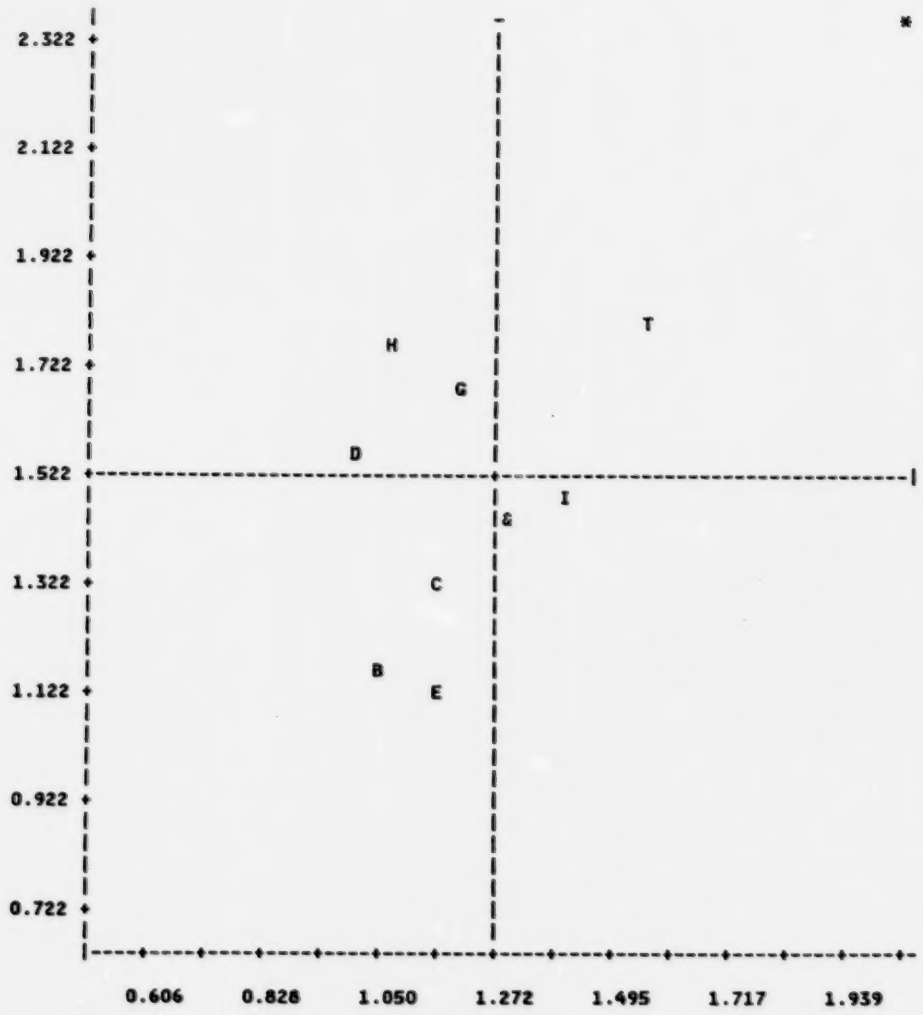
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	2.493	2.565
MEDIAN	2.620	2.688
STANDARD DEVIATION	0.026	0.028
STANDARD ERROR OF THE MEAN	0.008	0.008

NO OF POINTS IN EACH QUADRANT
NE = 5
SE = 0
NW = 3
SW = 2

TEST 28: ABSORPTION (FINE AGGREGATE)
SCATTER PLOT ANALYSIS
SCALE: 0.089 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



LEGEND
======

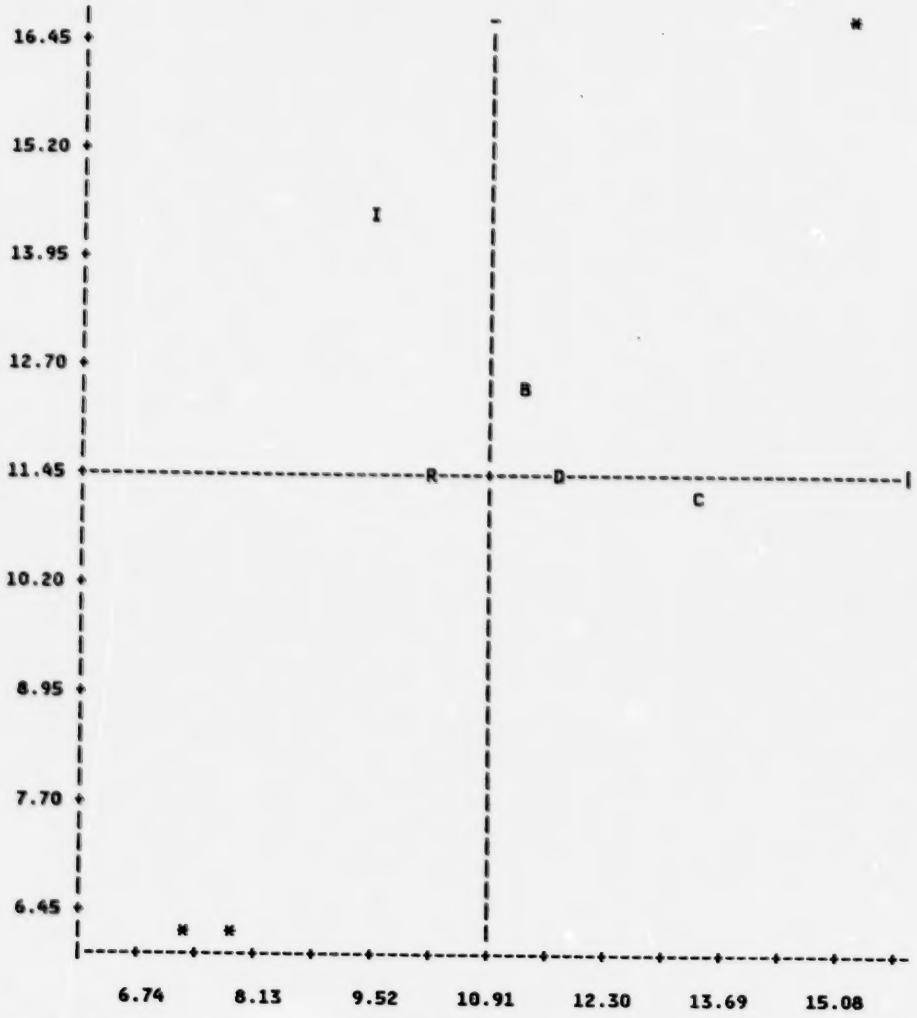
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	5.345	5.274
MEDIAN	1.273	1.522
STANDARD DEVIATION	0.171	0.213
STANDARD ERROR OF THE MEAN	0.049	0.062

NO OF POINTS IN EACH QUADRANT
NE = 1
SE = 3
NW = 3
SW = 3

TEST 29: MAGNESIUM SULFATE SOUNDNESS LOSS, % (FINE AGGREGATE)
SCATTER PLOT ANALYSIS
SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



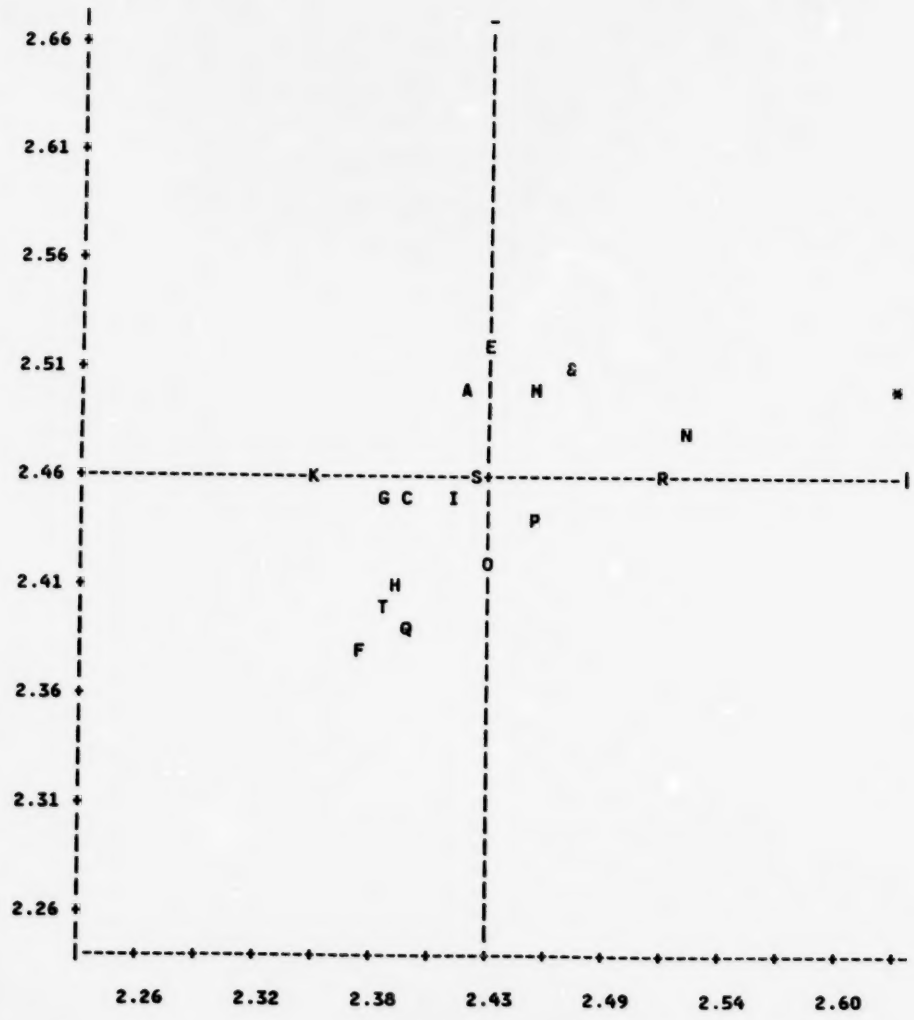
LEGEND
======
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	10.952	11.061
MEDIAN	10.910	11.450
STANDARD DEVIATION	2.731	4.122
STANDARD ERROR OF THE MEAN	0.965	1.457

NO OF POINTS IN EACH QUADRANT
NE = 2
SE = 1
NW = 2
SW = 0

TEST 31: MAXIMUM WET DENSITY G/CM3 (MOISTURE - DENSITY RELATIONSHIP)
SCATTER PLOT ANALYSIS
SCALE: 0.022 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



LEGEND
======

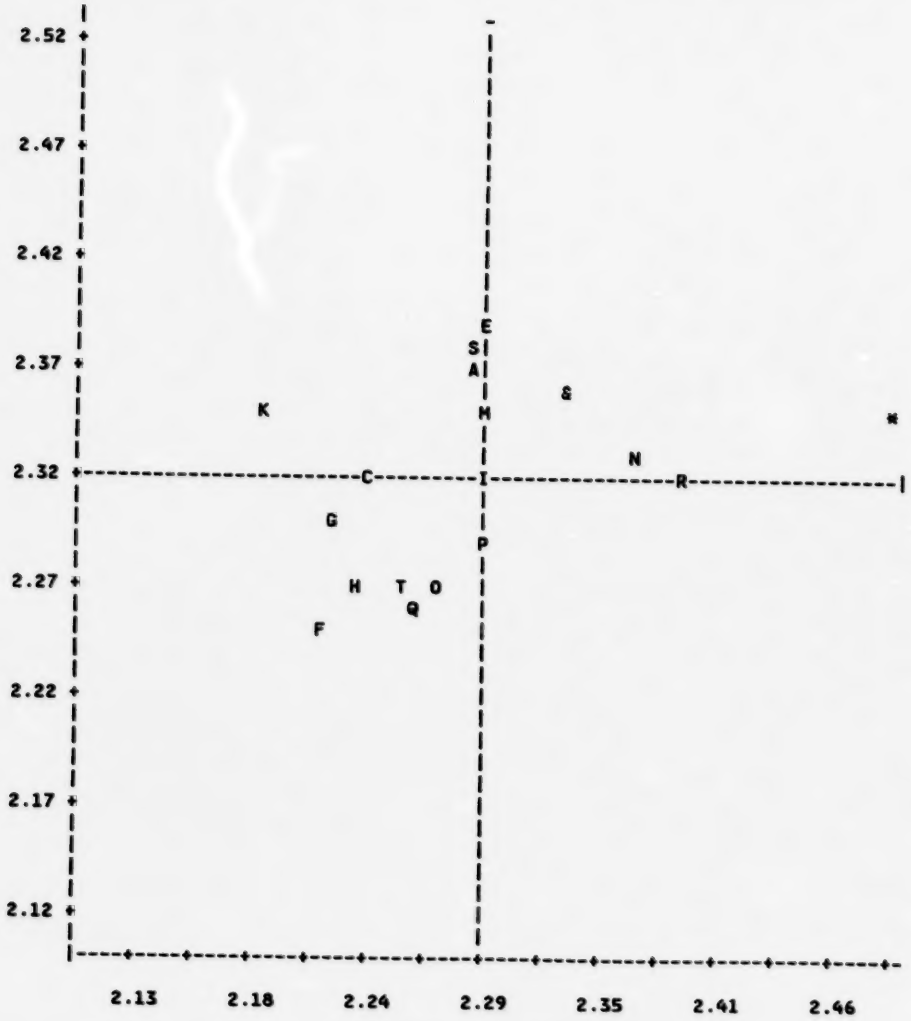
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	2.463	2.461
MEDIAN	2.431	2.464
STANDARD DEVIATION	0.049	0.040
STANDARD ERROR OF THE MEAN	0.011	0.009

NO OF POINTS IN EACH QUADRANT
NE = 5
SE = 1
NW = 4
SW = 8

TEST 32: MAXIMUM DRY DENSITY G/CM3 (MOISTURE - DENSITY RELATIONSHIP)
SCATTER PLOT ANALYSIS
SCALE: 0.022 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



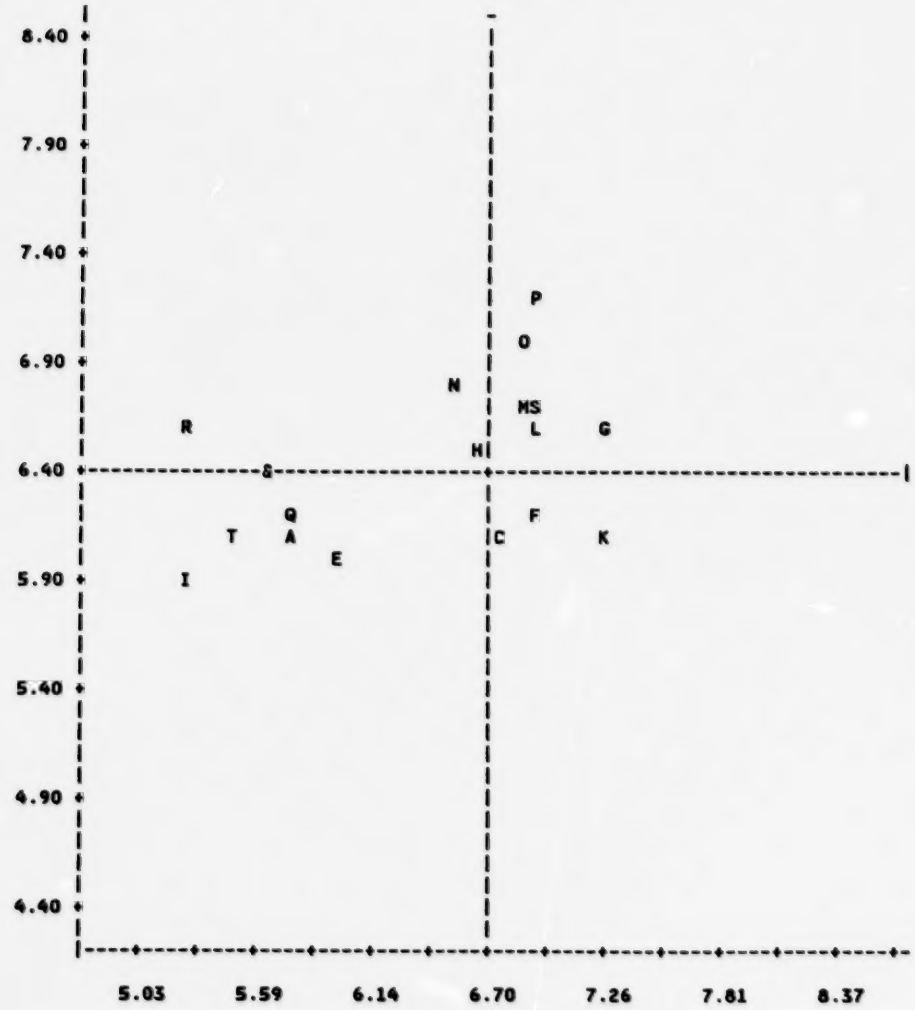
LEGEND
======

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 53 = K
LAB. NO. 55 = L
LAB. NO. 56 = M
LAB. NO. 58 = N
LAB. NO. 60 = O
LAB. NO. 62 = P
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 69 = S
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	2.317	2.317
MEDIAN	2.295	2.316
STANDARD DEVIATION	0.053	0.041
STANDARD ERROR OF THE MEAN	0.012	0.009

NO OF POINTS IN EACH QUADRANT
NE = 4
SE = 0
NW = 7
SW = 7

TEST 33: OPTIMUM MOISTURE, % (MOISTURE - DENSITY RELATIONSHIP)
SCATTER PLOT ANALYSIS HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.222 UNITS=1 CM VERTICAL AXIS: MATERIAL 2



LEGEND
======

LAB. NO. 1	A
LAB. NO. 2	B
LAB. NO. 4	C
LAB. NO. 5	D
LAB. NO. 6	E
LAB. NO. 13	F
LAB. NO. 14	G
LAB. NO. 17	H
LAB. NO. 27	I
LAB. NO. 53	K
LAB. NO. 55	L
LAB. NO. 56	M
LAB. NO. 58	N
LAB. NO. 60	O
LAB. NO. 62	P
LAB. NO. 66	Q
LAB. NO. 67	R
LAB. NO. 69	S
LAB. NO. 70	T

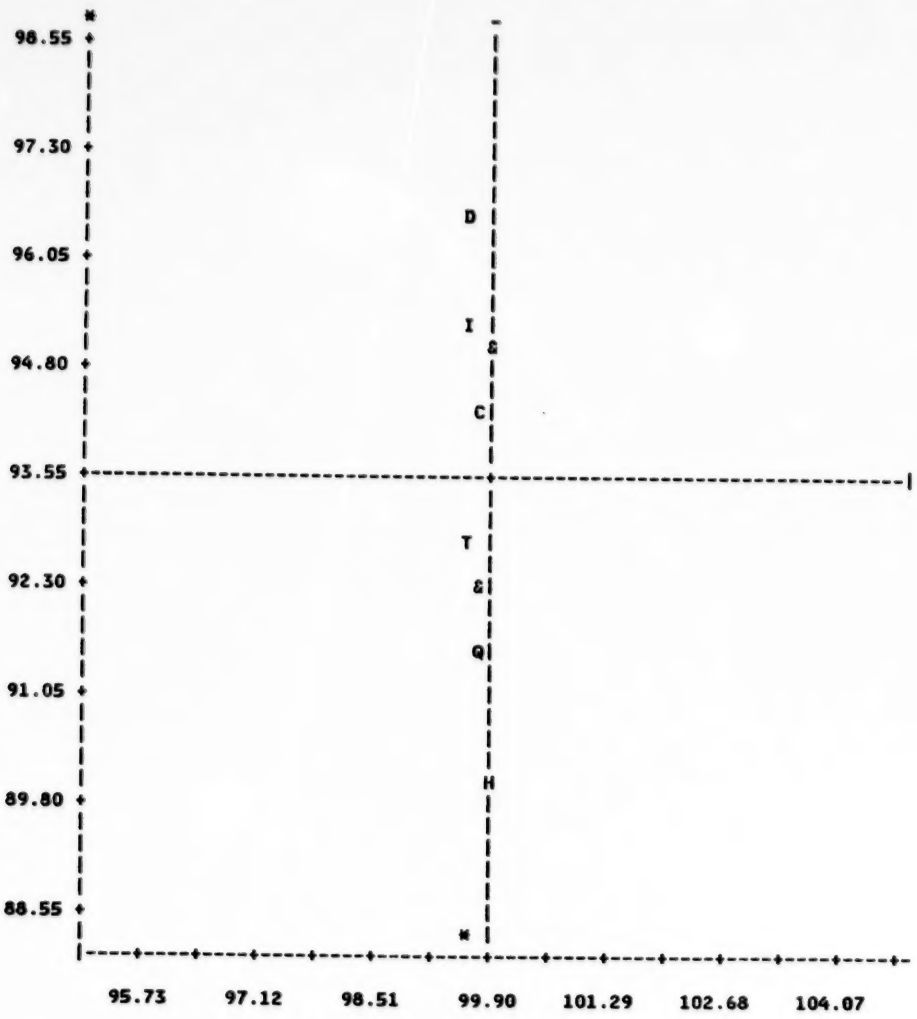
	MATERIAL 1	MATERIAL 2
MEAN	6.400	6.426
MEDIAN	6.700	6.400
STANDARD DEVIATION	0.705	0.346
STANDARD ERROR OF THE MEAN	0.162	0.079

NO OF POINTS IN EACH QUADRANT

NE =	6
SE =	3
NW =	5
SW =	5

TEST 40: PERCENT PASSED ON 2.00 MM SIEVE (PARTICLE SIZE ANALYSIS)
SCATTER PLOT ANALYSIS
SCALE: 0.556 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



LEGEND
======

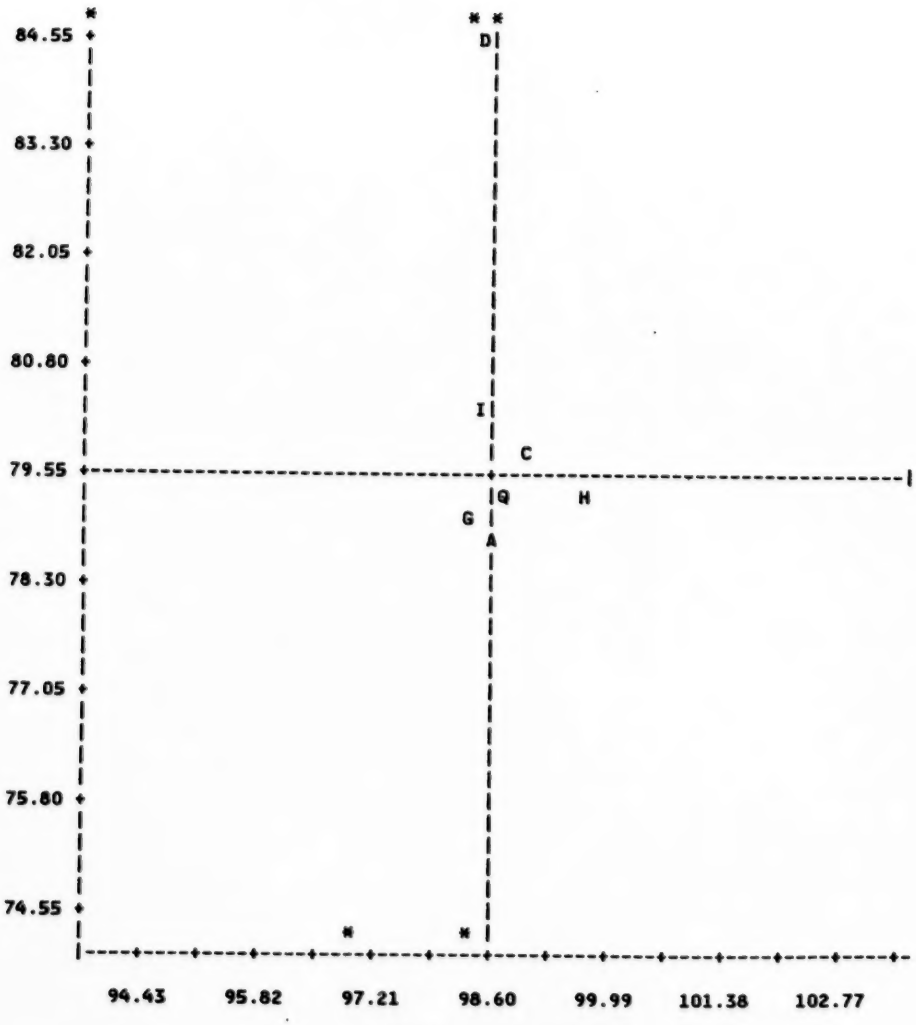
LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 13	= F
LAB. NO. 14	= G
LAB. NO. 17	= H
LAB. NO. 27	= I
LAB. NO. 66	= Q
LAB. NO. 67	= R
LAB. NO. 70	= T

	MATERIAL 1	MATERIAL 2
MEAN	99.367	93.608
MEDIAN	99.900	93.550
STANDARD DEVIATION	1.818	3.076
STANDARD ERROR OF THE MEAN	0.525	0.888

NO OF POINTS IN EACH QUADRANT

NE =	0
SE =	0
NW =	5
SW =	5

TEST 41: PERCENT PASSED ON 425 MM SIEVE (PARTICLE SIZE ANALYSIS)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.556 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



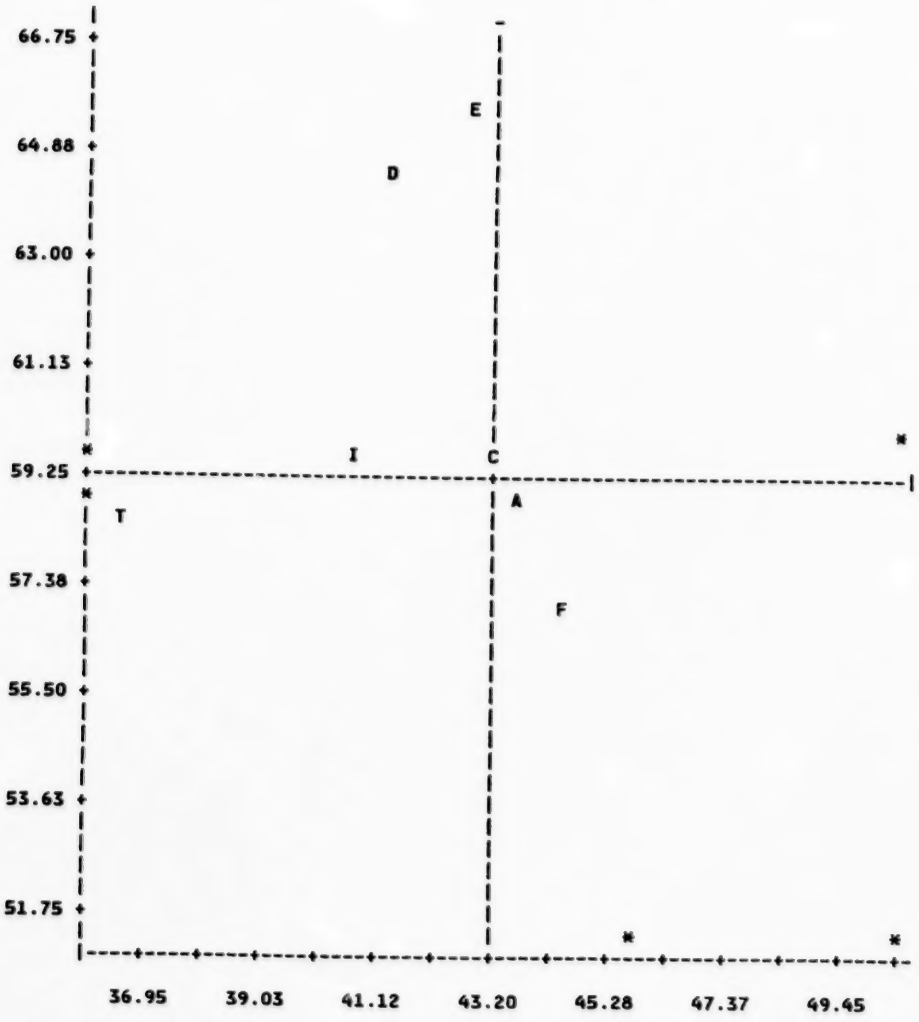
LEGEND
======
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	96.933	81.258
MEDIAN	98.600	79.550
STANDARD DEVIATION	0.239	8.207
STANDARD ERROR OF THE MEAN	0.069	2.369

NO OF POINTS IN EACH QUADRANT
NE = 1
SE = 2
NW = 2
SW = 2

TEST 42: PERCENT PASSED ON 75 UM SIEVE (PARTICLE SIZE ANALYSIS)
SCATTER PLOT ANALYSIS
SCALE: 0.833 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



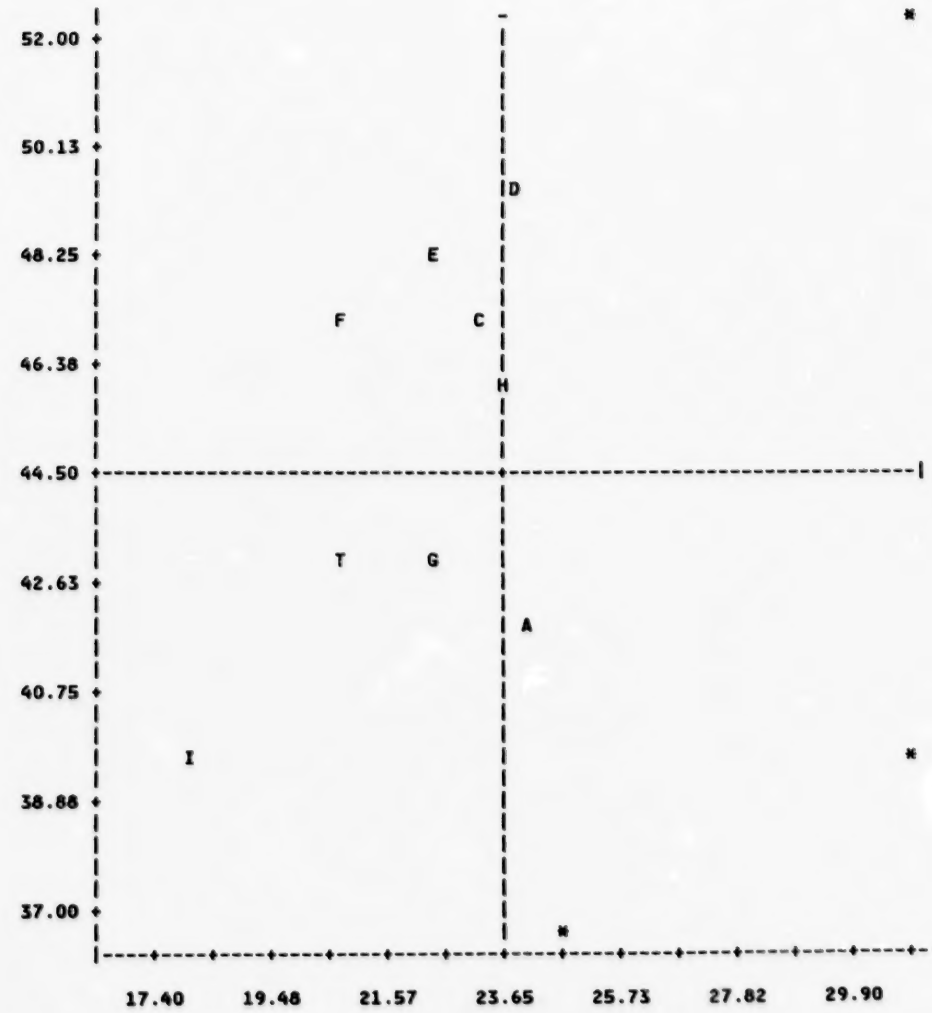
LEGEND
======

LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	43.250	58.525
MEDIAN	43.200	59.250
STANDARD DEVIATION	7.720	4.452
STANDARD ERROR OF THE MEAN	2.228	1.285

NO OF POINTS IN EACH QUADRANT
NE = 0
SE = 2
NW = 4
SW = 1

TEST 43: PERCENT PASSED ON 20 UM SIEVE (PARTICLE SIZE ANALYSIS)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.833 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



LEGEND
======

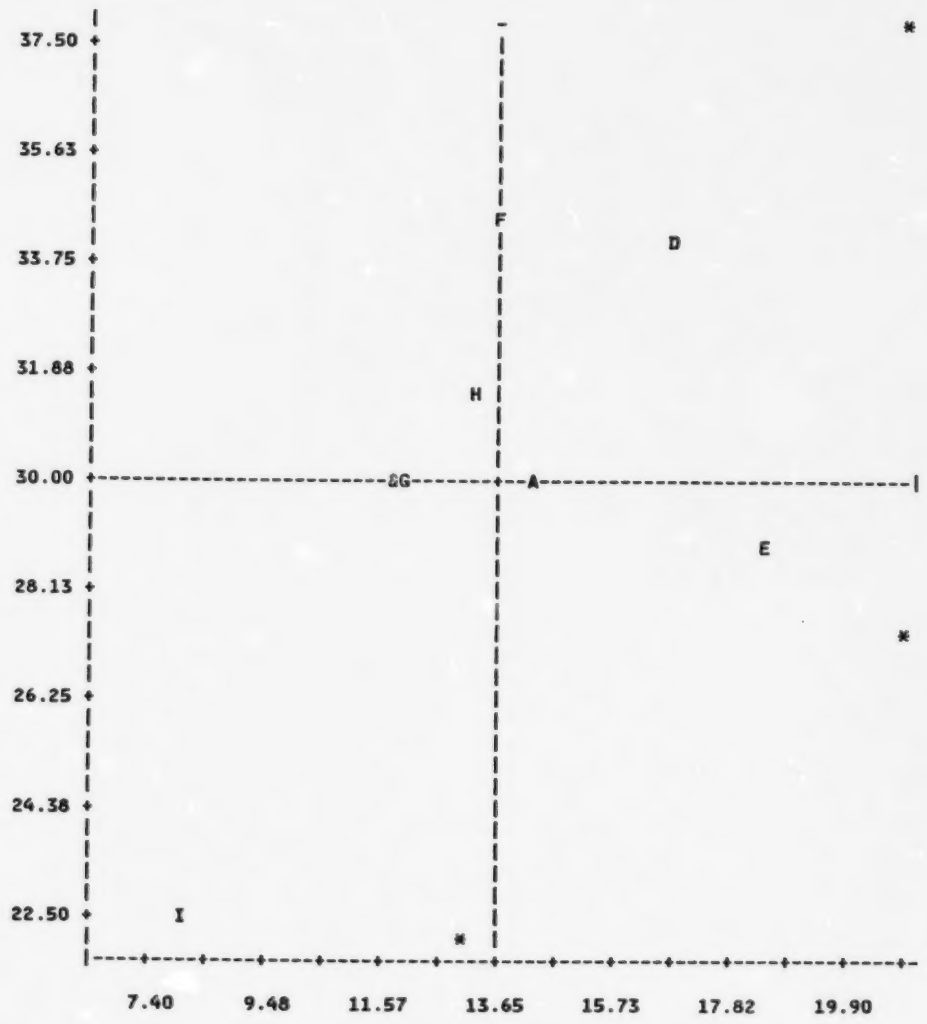
LAB. NO. 1	= A
LAB. NO. 2	= B
LAB. NO. 4	= C
LAB. NO. 5	= D
LAB. NO. 6	= E
LAB. NO. 13	= F
LAB. NO. 14	= G
LAB. NO. 17	= H
LAB. NO. 27	= I
LAB. NO. 66	= Q
LAB. NO. 67	= R
LAB. NO. 70	= T

	MATERIAL 1	MATERIAL 2
MEAN	25.542	44.625
MEDIAN	23.650	44.500
STANDARD DEVIATION	2.061	5.494
STANDARD ERROR OF THE MEAN	0.595	1.586

NO OF POINTS IN EACH QUADRANT

NE =	1
SE =	1
NW =	4
SW =	3

TEST 44: PERCENT PASSED ON 5 UM SIEVE (PARTICLE SIZE ANALYSIS)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.833 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2

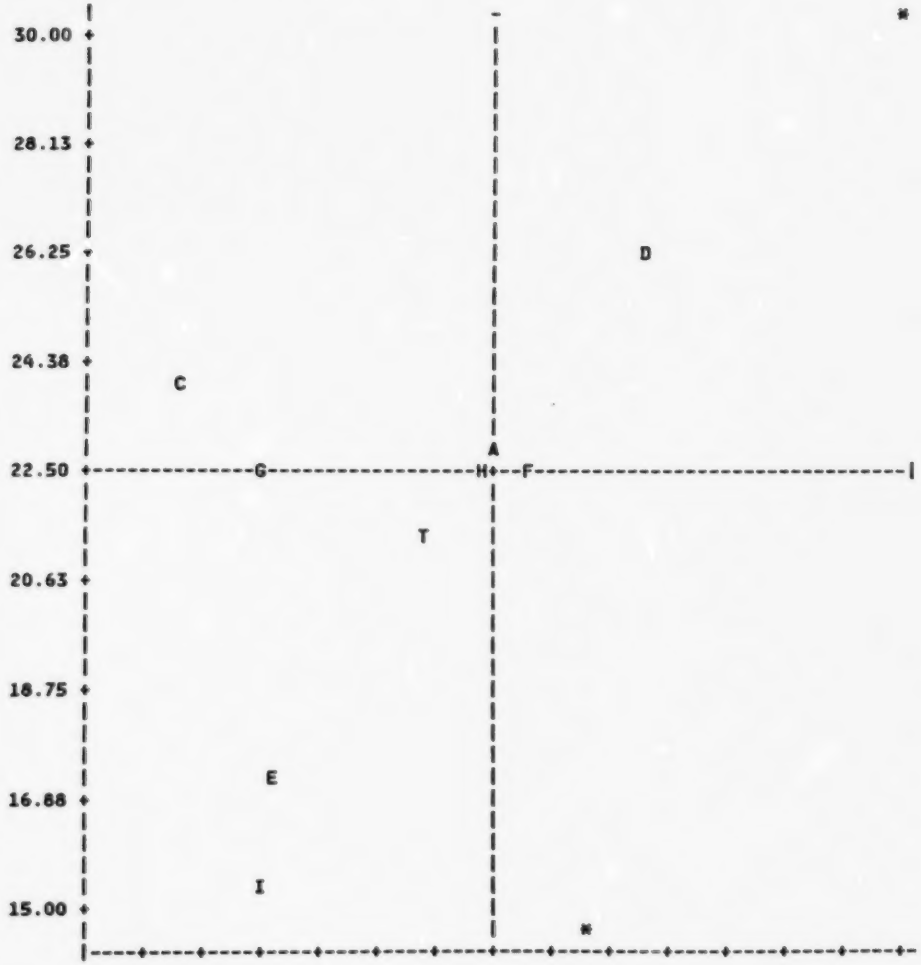


LEGEND
======
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	16.525	30.533
MEDIAN	13.650	30.000
STANDARD DEVIATION	2.910	3.759
STANDARD ERROR OF THE MEAN	0.840	1.085

NO OF POINTS IN EACH QUADRANT
NE = 2
SE = 1
NW = 5
SW = 1

TEST 45: PERCENT PASSED ON 2 UM SIEVE (PARTICLE SIZE ANALYSIS)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.833 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



LEGEND
======

LAB. NO. 1 = A
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

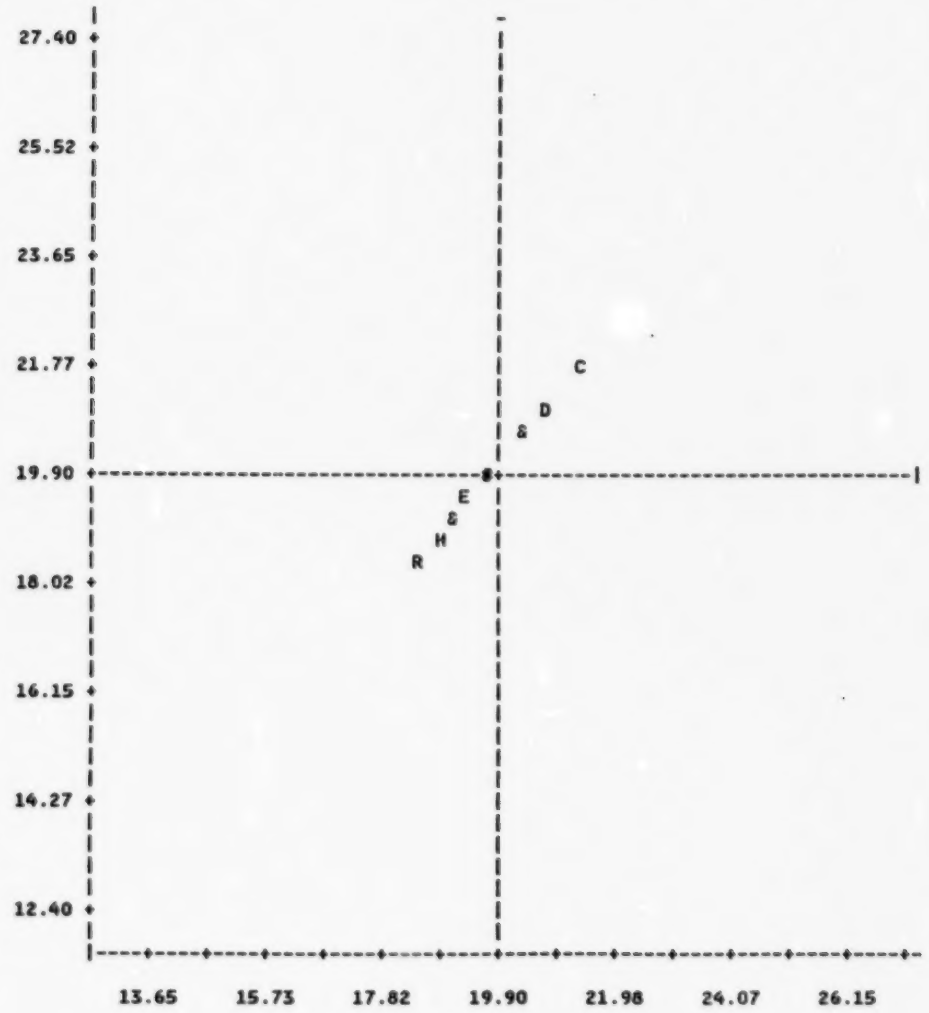
	MATERIAL 1	MATERIAL 2
MEAN	9.155	22.555
MEDIAN	8.000	22.500
STANDARD DEVIATION	2.911	3.623
STANDARD ERROR OF THE MEAN	0.878	1.092

NO OF POINTS IN EACH QUADRANT

NE = 2
SE = 0
NW = 4
SW = 3

TEST 46: LIQUID LIMIT, %
SCATTER PLOT ANALYSIS
SCALE: 0.833 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



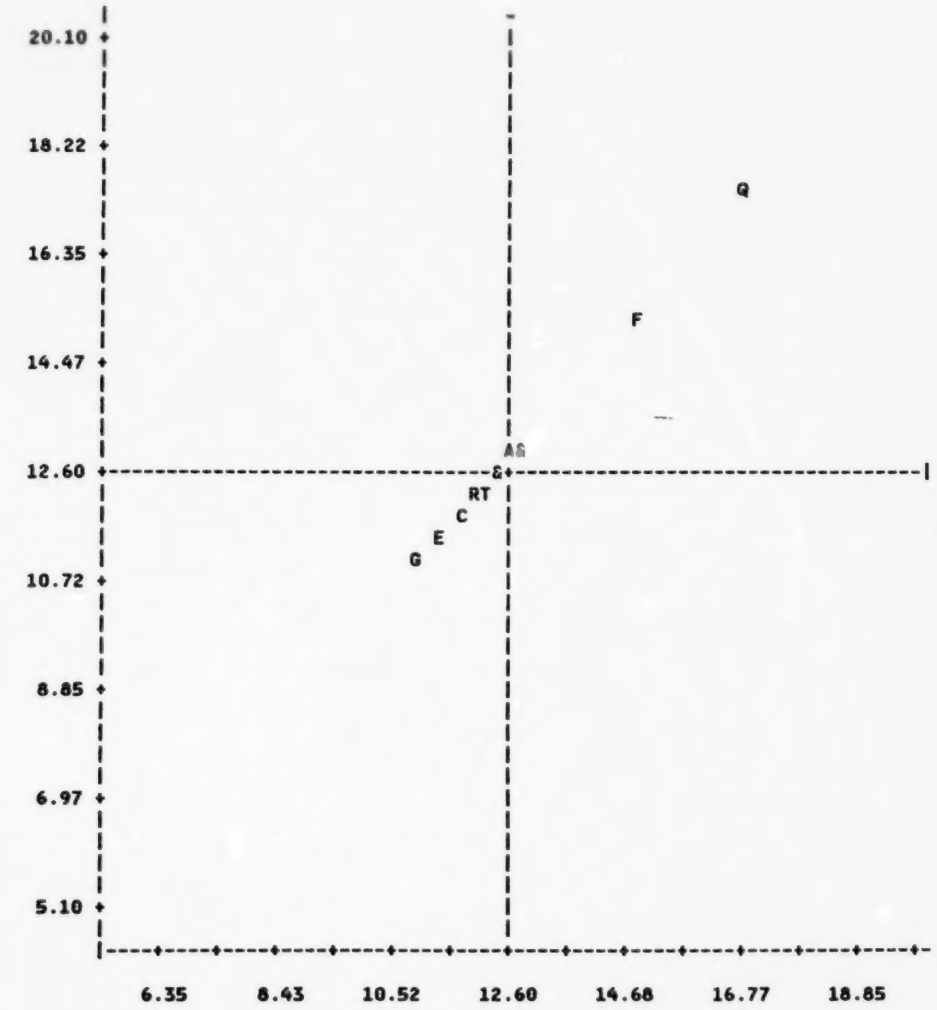
LEGEND
======
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	19.917	19.917
MEDIAN	19.900	19.900
STANDARD DEVIATION	0.874	0.874
STANDARD ERROR OF THE MEAN	0.252	0.252

NO OF POINTS IN EACH QUADRANT
NE = 4
SE = 0
NW = 3
SW = 5

TEST 47: PLASTIC LIMIT, %
SCATTER PLOT ANALYSIS
SCALE: 0.833 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



LEGEND
======

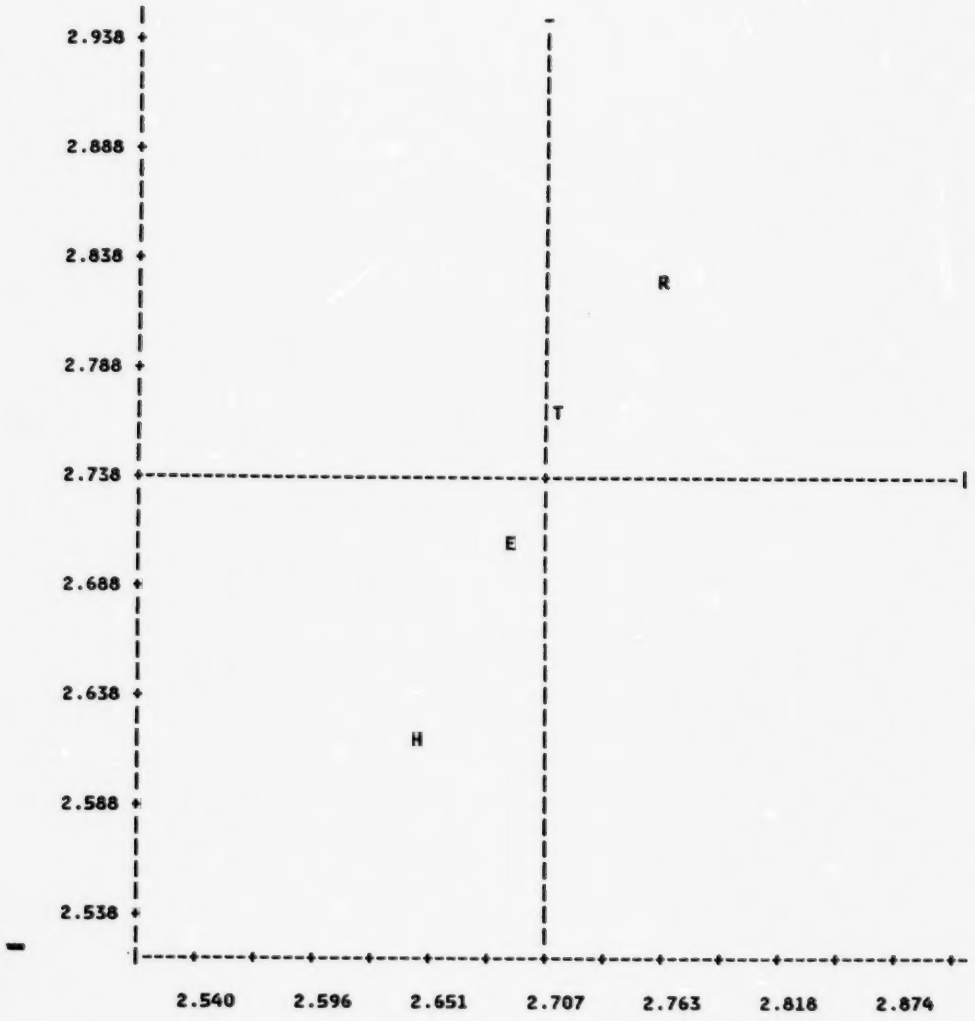
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	12.950	12.950
MEDIAN	12.600	12.600
STANDARD DEVIATION	1.625	0.632
STANDARD ERROR OF THE MEAN	0.469	0.182

NO OF POINTS IN EACH QUADRANT
NE = 4
SE = 0
NW = 3
SW = 5

TEST 49: RELATIVE DENSITY
SCATTER PLOT ANALYSIS
SCALE: 0.022 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2

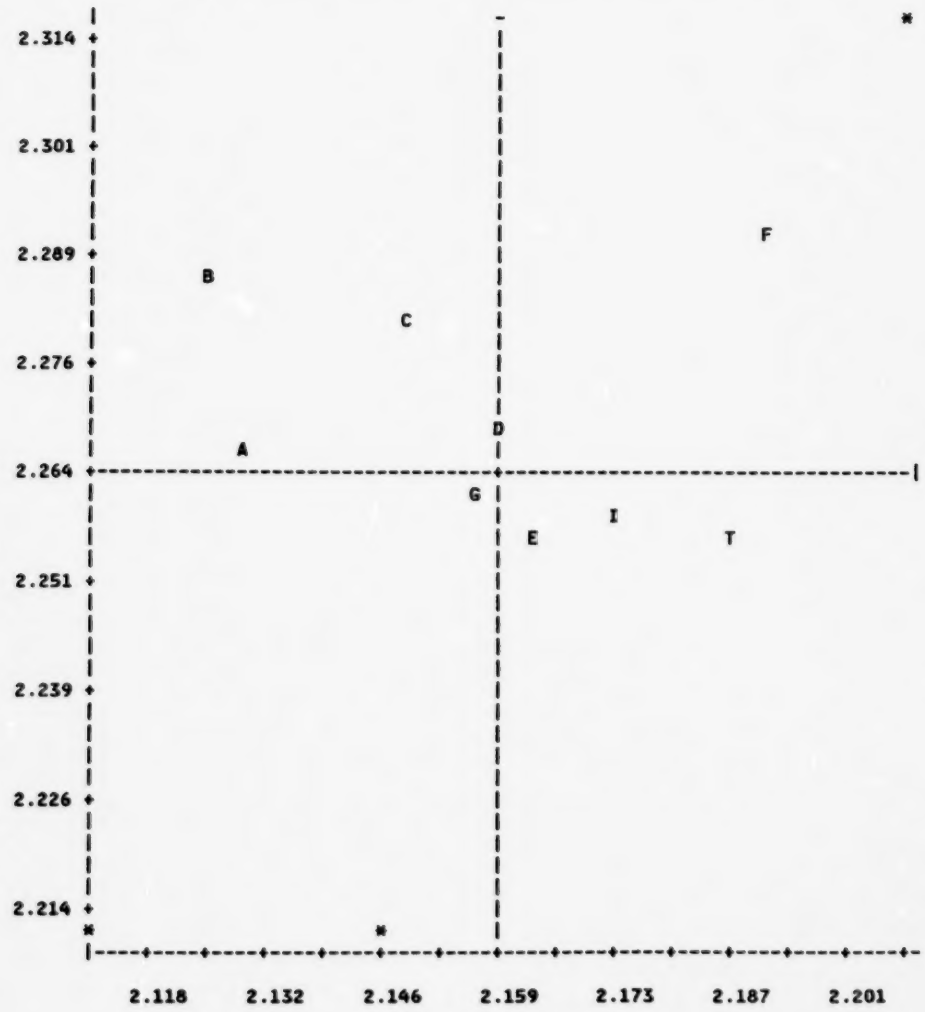


LEGEND
======
LAB. NO. 6 = E
LAB. NO. 17 = H
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	2.708	2.730
MEDIAN	2.707	2.738
STANDARD DEVIATION	0.050	0.082
STANDARD ERROR OF THE MEAN	0.025	0.041

NO OF POINTS IN EACH QUADRANT
NE = 2
SE = 0
NW = 0
SW = 2

TEST 50: MAXIMUM WET DENSITY G/CM3 (MOISTURE - DENSITY RELATIONSHIP)
SCATTER PLOT ANALYSIS — HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.006 UNITS=1 CM — VERTICAL AXIS: MATERIAL 2



LEGEND
======

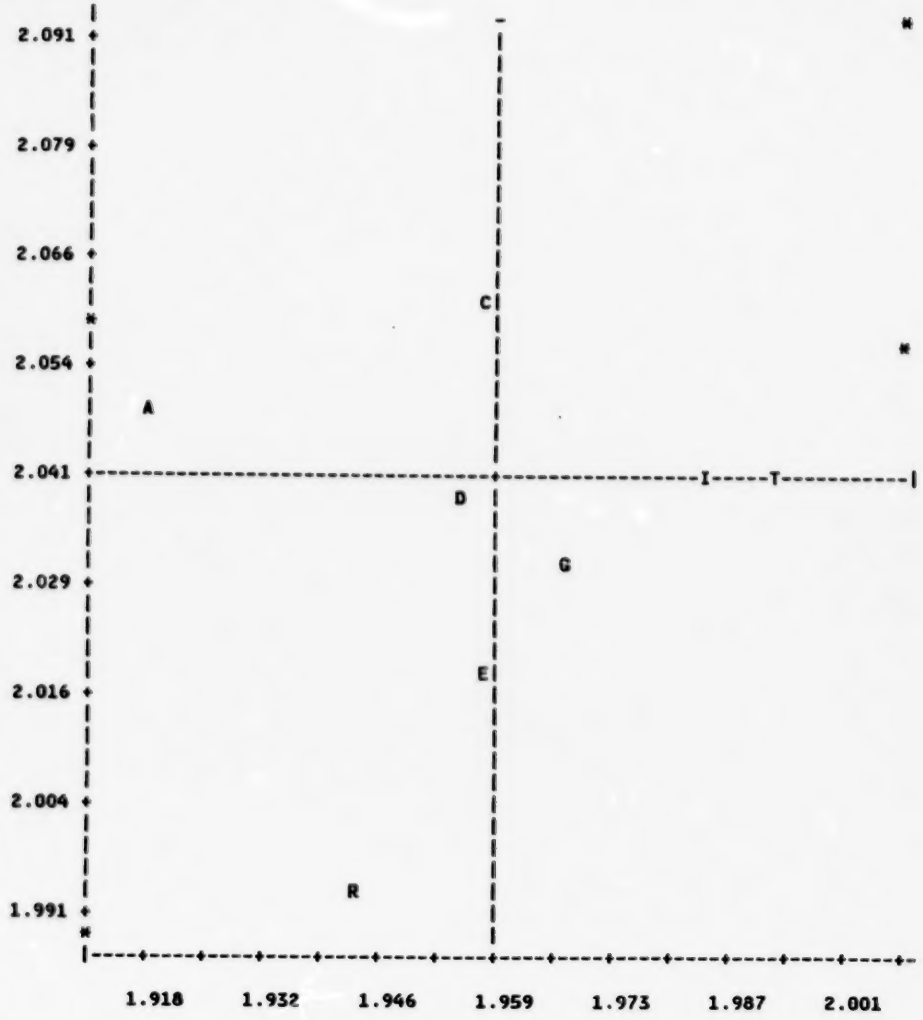
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	2.158	2.263
MEDIAN	2.160	2.264
STANDARD DEVIATION	0.035	0.034
STANDARD ERROR OF THE MEAN	0.010	0.010

NO OF POINTS IN EACH QUADRANT
NE = 1
SE = 3
NW = 4
SW = 1

TEST 51: MAXIMUM DRY DENSITY G/CM3 (MOISTURE - DENSITY RELATIONSHIP)
SCATTER PLOT ANALYSIS
SCALE: 0.006 UNITS=1 CM

HORIZONTAL AXIS: MATERIAL 1
VERTICAL AXIS: MATERIAL 2



LEGEND
======

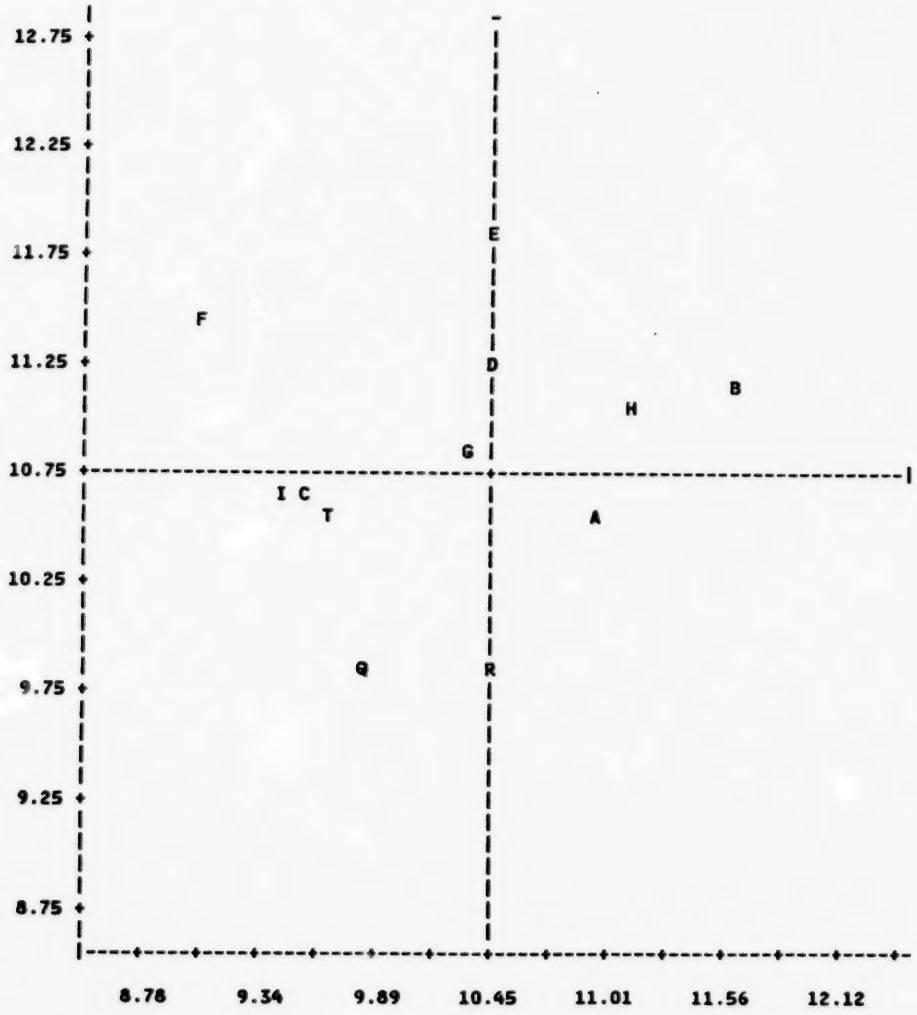
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	1.959	2.041
MEDIAN	1.959	2.042
STANDARD DEVIATION	0.042	0.032
STANDARD ERROR OF THE MEAN	0.012	0.009

NO OF POINTS IN EACH QUADRANT

NE = 2
SE = 1
NW = 2
SW = 3

TEST 52: OPTIMUM MOISTURE, % (MOISTURE - DENSITY RELATIONSHIP)
SCATTER PLOT ANALYSIS HORIZONTAL AXIS: MATERIAL 1
SCALE: 0.222 UNITS=1 CM VERTICAL AXIS: MATERIAL 2



LEGEND
======
LAB. NO. 1 = A
LAB. NO. 2 = B
LAB. NO. 4 = C
LAB. NO. 5 = D
LAB. NO. 6 = E
LAB. NO. 13 = F
LAB. NO. 14 = G
LAB. NO. 17 = H
LAB. NO. 27 = I
LAB. NO. 66 = Q
LAB. NO. 67 = R
LAB. NO. 70 = T

	MATERIAL 1	MATERIAL 2
MEAN	10.300	10.808
MEDIAN	10.450	10.750
STANDARD DEVIATION	0.768	0.553
STANDARD ERROR OF THE MEAN	0.222	0.160

NO OF POINTS IN EACH QUADRANT
NE = 2
SE = 1
NW = 4
SW = 5